THE TREATMENT OF FRACTURE OF THE PATELLA

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In the treatment of fracture of the patella, the most ideal procedure is that which will return the kneejoint to normal range of motion with the minimum of resultant traumatic arthritis. It is also very important that this procedure be accomplished with a minimum of time lost.

The consensus of opinion is that the vast majority of cases of fracture of the patella should be treated by open operation. The operative procedure generally adopted is thorough exploration of the fracture, removing all blood clots, replacing the fragments, and maintaining their position by means of a purse-string suture of silk or wire. This procedure is by no means simple. Even experienced and meticulous surgeons find it wrought with difficulties that often are not sufficiently emphasized. It is very difficult to prevent a certain tipping of one or more fragments, which results in roughness on the undersurface of the patella (Fig. 1 A and B). In the literature there are many suggestions for various methods of insertion of the sutures in an attempt to avoid this complication. The fact that there are so many methods only emphasizes the difficulties encountered. If this roughening occurs, it causes a grating or crepitation of the kneecap when motion is started, which is very annoying to most patients, and definitely prolongs the time of gaining full range of motion

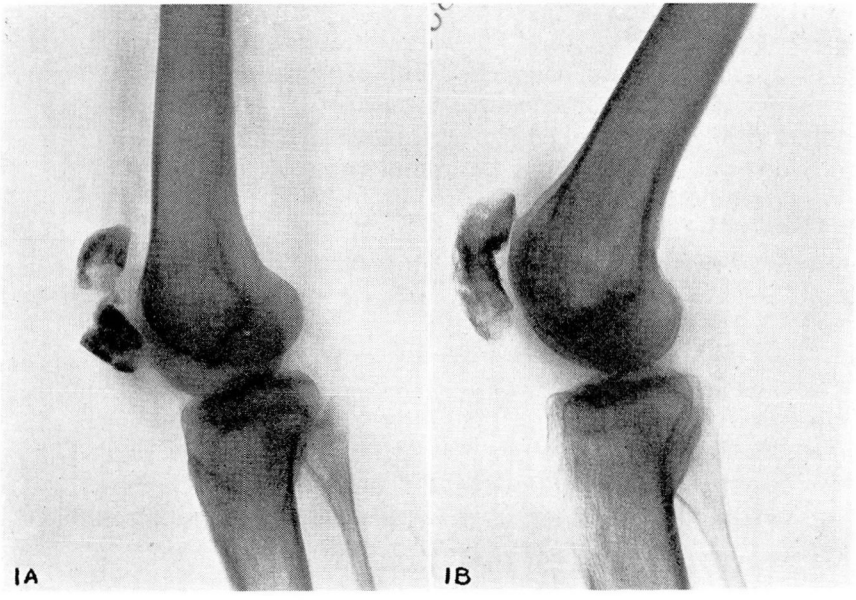

FIGURE 1: A. Fractured patella.
B. Showing roughness on the undersurface of the patella.

in the knee. In some instances where this irregularity is marked, it is often impossible to procure full flexion of the knee-joint even after months of treatment.

J. E. M. Thomson, in 1935[1], suggested the removal of the comminuted fragments or the smaller fragment. This procedure has proved most satisfactory in eliminating the irregularity of the under-surface of the patella. With certain modifications I have used this procedure for a number of years with such uniformly gratifying results that I feel justified in emphasizing the advantages of this operation in fractures of the patella.

The operative procedure which I prefer, is the exposure of the patella through a longitudinal incision over the front of the knee, extending from about four inches above the patella to the attachment of the patellar tendon, reflecting the flaps sufficiently laterally to expose the tears in the capsule of the joint. The patellar tendon is then split longitudinally (Fig. 2A) and all the comminuted fragments are removed. An incision is then made over the remaining portion of the patella and the perisoteal covering is reflected. A V-shaped strip of the quadriceps tendon is then freed, leaving the lower end attached and of

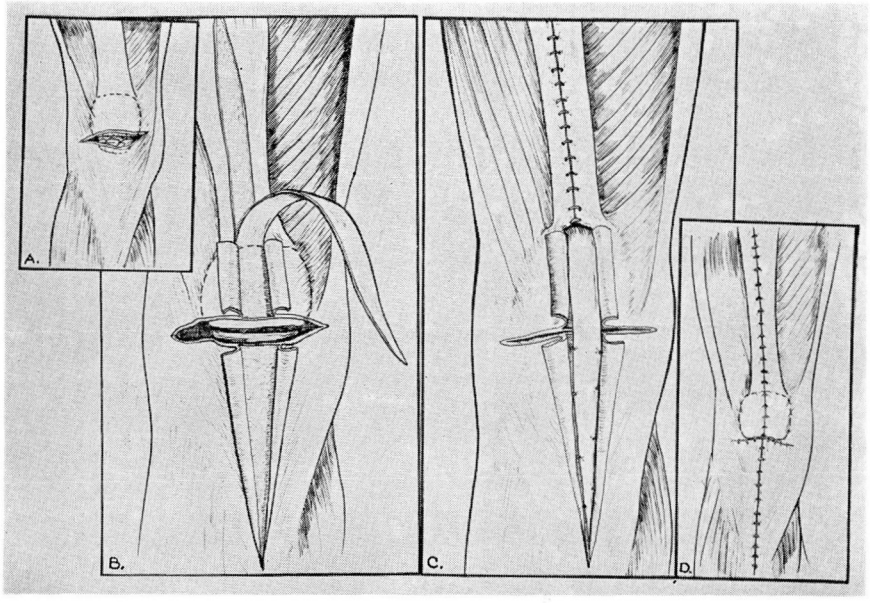

FIGURE 2: A. First incision over the front of the knee.

B. V-shaped strip of quadriceps tendon is freed, leaving the lower end attached.

C. and D. Edges of the quadriceps tendon are sutured into place and the lateral tears of the capsule repaired.

sufficient length to reach to the tibial tubercle (Fig. 2B). This strip of tendon is fixed firmly in place by sewing the reflected portions of the patellar tendon and periosteum on the anterior surface of the patella over the transplanted tendon. The edges of the quadriceps tendon are sutured into place and the lateral tears of the capsule repaired (Fig. 2 C and D). Chromic catgut is used throughout the repair. One point in the technic to be emphasized is that in placing the fascia strip in its new bed, care must be taken not to shorten the patellar tendon, for in so doing much time can be saved in regaining full range of motion in the joint. The transplanted piece of tendon aids greatly in filling the defect caused by removal of fragments and facilitates repair of the patellar tendon. The skin incision is then closed and the knee supported by means of a posterior plaster splint.

Quadriceps exercises are instituted in ten days and all protection is removed at the end of the third week. The range of motion gradually increases and by the end of six weeks a stable joint with 90 degrees of motion is obtained and the patient usually is able to return to his former occupation. Complete range of motion has been procured by time and use, until normal range of motion is established.

The advantages of this operation for the repair of a fractured patella is that the problem of bone repair is changed to one of liga-

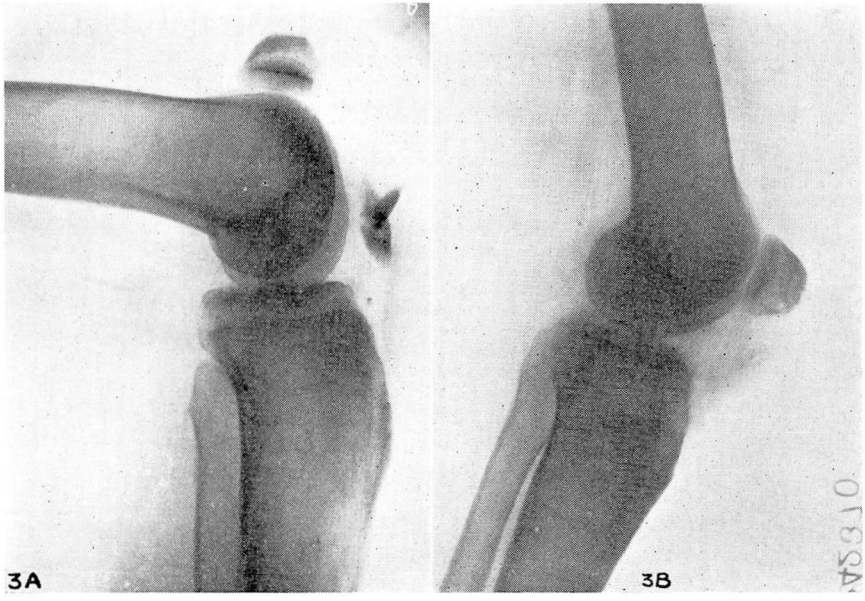

FIGURE 3: A. Showing fractured patella.
B. Degree of repair six weeks after operation. There is full range of normal motion and the patient was able to return to his regular occupation.

mentous repair. The quadriceps muscle is well anchored to its tibial attachment, so there is no danger in starting early motions of the knee. The degree of bony repair of the patella does not have to be determined before instituting motion. By this procedure the possibility of a rough undersurface with its complications is also eliminated. In our experience the time necessary for return to normal function has been greatly facilitated.

The results in two typical cases are presented in figures 3 and 4.

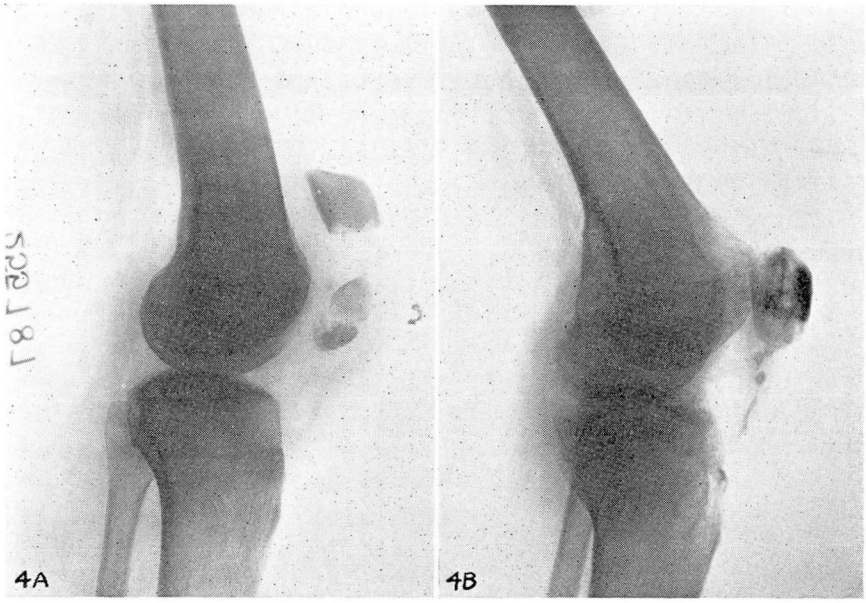

FIGURE 4: A. Showing fracture of patella.

B. Repair with some calcification in the patellar tendon; 90 degrees flexion in six weeks; full range of motion in twelve weeks.

REFERENCE

1. Thomson, J. E. M.: Comminuted fractures of patella; treatment of cases presenting one large fragment and several small fragments, J. Bone & Joint Surg. 17:431-434 (April) 1935.